MECHANIZATION ASSOCIATES

MOUNTAIN VIEW, CALIFORNIA

INSTRUCTION MANUAL

MODEL 122B

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GENERAL DESCRIPTION

The machine is designed to automatically dip a batch of parts into a solder pot (this may be a wave type) at a pre-setable speed, hold in the pot for a selectable time, withdraw at a different pre-setable speed up to a limit and then repeat this sequence up to nine cycles. As a special feature it can be programmed to withdraw in a "jiggling" fashion such as to minimize bridges and globs on the ends of the leads.

SWITCHES AND CONTROLS

Refer to Drawing #A-8132 the Control Panel Illustration and Drawing B-8130 the Solder Dipper Limit Switches and Postions.

NOTE: Before entering any data (or group of data) press RST and then START. This clears the registers so data is accepted.

A. Ambient Dwell (AMB DWELL)
This sets the time the dip bracket is out of the solder pot between cycles. It is set as follows: X1 is in seconds and X10 is in ten times seconds, so if you wanted; for instance, 11 seconds you would set X10 at 1 and X1 at 1 and then press the ENTR button. This transfers that number to the temporary working memory.

B. Immersion Dwell (IMM DWELL)
X10 and X1 are in seconds and tenths of seconds respectively. Set the number desired and with the mode switch in the Immersion Mode then press the ENTR button and this time will also be recorded in temporary memory

C. Speed In (SPEED IN)
X_{10} (MSD) and X_1 (LSD) set the speed. Refer to A-6233. For immersion speed in, when X_{10} is set at 6 and X_1 at 0, this means 60 on the curve which would result in an immersion speed of 1.1 inches/second and a withdrawal speed of 1.75 inches/second.

D. Speed Out (SPEED OUT)
Similar to C above.

E. The Number of Cycles (NO CYC)
Enter into temporary memory as above

F. Speed Change Point (SPD CHG)
Refer now to B-8130 the Limit and Positions Drawing. When started the machine will lower the device at the rate set per above until it gets to the speed change point. Typically this is the point which the leads begin to enter the solder. It is set as follows: Set the mode switch to Speed Change, then using the manual lower (MAN LWR) switch, lower the dip bracket until the leads just begin to immerse into the solder or to whatever point you desire the speed to change to a slower immersion rate. Then touch the ENTR switch and this point is recorded.
NOTE: If your machine has a high helix angle (4 start) lead screw and full step mode software (EPROM #116 dated 3/20/84) it may run roughly when using MAN LWR or MAN RAISE switches. This will not cause a problem.

G. The Immersion Limit (IMM LMT)
This is the maximum point to which the devices are to be immersed into the solder. Again, with the Mode Switch set to the Immersion Limit (IMM LMT) and using the manual raise and lower switches, position the dip bracket until your devices are just at the Immersion Limit and then touch the ENTR button and again this position is recorded.

H. Not applicable

I. Read Write Postion (RD/WR)
The purpose of this position is to transfer the data in and out of temporary memory to the battery backed permanent (erasable) CMOS memory. Set the mode switch at RD/WR and dial in the product number you want assigned to the data. Then press WRT CODE. To read back a previously written program, afterthe power has been turned off:

1. Press RST and then START to go through one default program before RD/WR.

2. Set product code.

3. Set mode switch to 9 (run)

4. Press start once

5. Set mode switch to 8 (RD/WR)

6. Press read code to read product code memory

7. Set mode switch to 9 (run)

8. Operate by pressing start

J. Run (RUN)
This is the normal operational position. With the switch in run position and with the product number set, it is only necessary to actuate the start switch and it will go through the routine you have just entered.

K. Reset (RST)
This resets the computer to default conditions but does not effect the data in the CMOS memory.

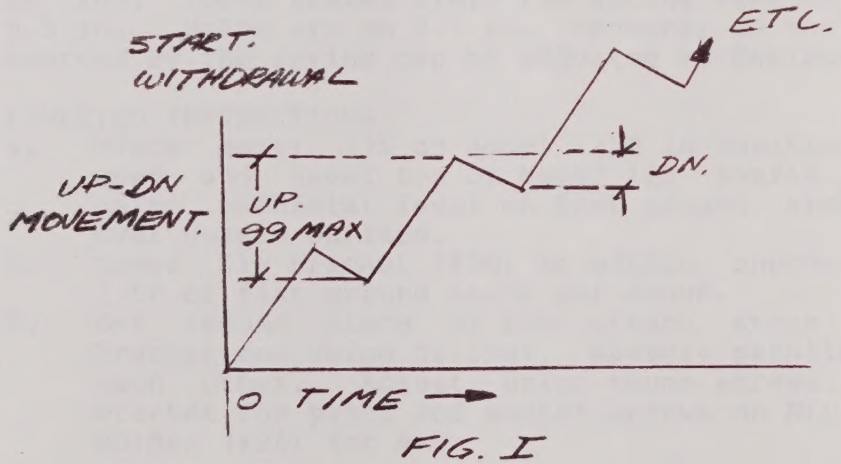


FIG. I

WITHDRAWAL JIGGLE PATTERN.

L. Withdrawal Jiggle
The purpose is to shake the component leads as they are being pulled from the solder so as to minimize bridges and globs. Whether moving up or down, the pallet holder always moves the half mil discrete steps. See Fig. I. Set as follows:
NOTE: If your machine has a high helix angle (4 start) lead screw and full step mode software (EPROM #116 dated 3/20/84) do not attempt jiggle, it has no meaning.

1. Mode Switch to RUN Position (#9)

2. Dial number of upward half mil steps desired on S10 and X_1 then press RD CODE.

3. Dial number of downward half mil steps desired on X10 and X_1, then press WR CODE.

M. Total Movement (Refer to D-6227
To reduce total travel (and hence time) during each dipping stroke, Item #17 may be positioned up or down on Item #24.

N. Spring counterbalance (Refer to D-6227, Issue I)
Adjust position of bottom on spring, It. #57 in hole of It. #22 so that net vertical force acting on DIP Bracket, It. #30, is approximately 0 at lowest point of travel. REF: Spring rate is one Lb. per inch of stretch. When attached to middle hole and carriage is at full lower travel limit the spring stretch is 5.5 in. Holes are on 0.7 in. centers, so the force exerted by the spring can be adjusted as desired.

O. LEVELING INSTRUCTIONS
1. Place Model 135 on Model 122B in position to be used and level top of Model 135 nozzle surface using machinist level on flat ground stock laid over nozzle surface.
2. Lower Dip Bracket (#30) to within approximately 1.00 of flat ground stock per above.
3. Set second piece of flat ground stock on Dip Bracket and using caliper, measure parallelism to each other. Adjust using thumb screws on dip bracket for pitch and socket screws on Dip Bracket Holder (#24) for yaw.

TELEDYNE SYSTEMS COMPANY STANDARD MANUFACTURING INSTRUCTIONS	MANUFACTURING ENGINEER V. Kozlowski	DATE 3/18/87	SMI NO. 1.19	REV. 00
	MFG ENGINEERING APPROVAL	DATE 3/31/87		
	QUALITY ASSURANCE APPROVAL	DATE 3-31-87	PAGE 1 OF	19

TITLE TIN LEADED DEVICES WITH WAVE TYPE REPCO AUTOMATIC SOLDER DIPPER

1.0 PURPOSE

To automatically dip a batch of parts into a wave type solder pot at a pre-set speed, hold in the pot for a selected time, and withdraw at a pre-set speed.

2.0 SCOPE

This instruction shall be used for tinning leaded device with a Repco model no. 122B automatic solder dipper and a Repco model no. 135-02 wave type solder pot.

3.0 APPLICABLE DOCUMENTS

- TPS 7514164 - Soldering and tinning in electrical and electronic applications, process for.
- Instruction Manuals Repco Model 135 wave type solder pot and Repco Model 122B Automatic Solder Dipper. (In P.E. Central Files)

4.0 MATERIAL AND EQUIPMENT

4.1 Repco Model No. 122B Automatic Solder Dipper and a Repco Model No. 135-02 Wave Type Solder Pot

4.2 Gloves - insulated

4.3 Vapor degreaser

4.4 Protective Safety Glasses

4.5 Pan for flux dip - pyrex

4.6 Pan for cleaning - stainless steel

4.7 Spoon - stainless steel

4.8 Spatula - stainless steel

4.9 Carpenter type - small level

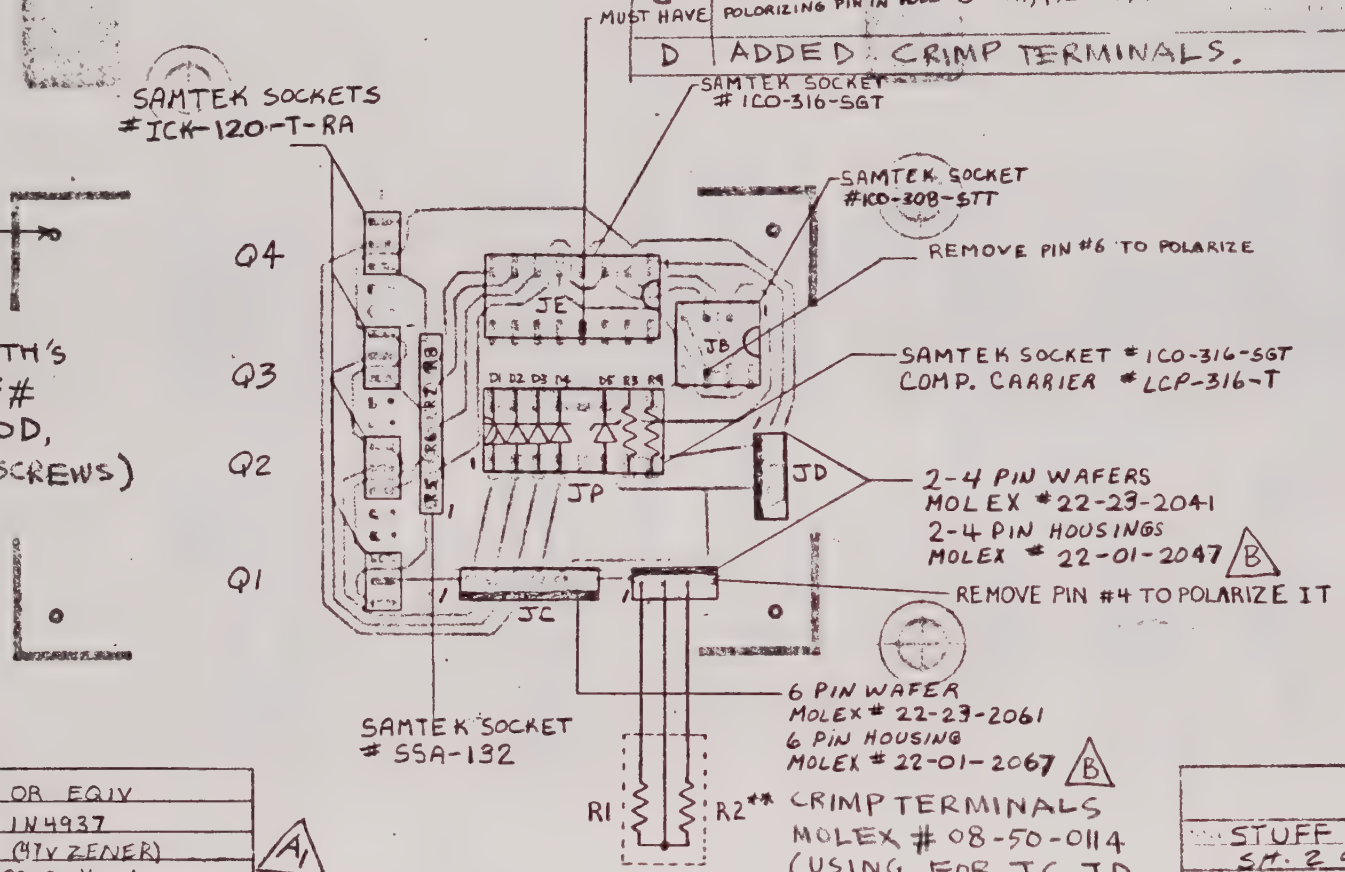
4.10 Smock - Cotton

4.11 ESD wrist strap

4.12 Dip Fixtures for IC's, flat-packs, axial and radials

4.13 Kester 5751 - Tinning Oil

REV	DESC.	BY	CK	DATE
A	WAS - 1N4757 (51V)	SAJ	BJK	11/21/84
B	WAS - 2045 & 2065, ADDED NOTES FOR MOUNTING	LP	BJK	2/26/86
C	MUST HAVE POLORIZING PIN IN HOLE #8 R1, R2 WAS : 5Ω, 10W.	LP	BJK	5/12/86
D	ADDED : CRIMP TERMINALS.	LP	BJK	7/30/86



REFER TO:
ARTWORK SH. 1
SCHEM SH. 3
DRILL CHT SH. 4

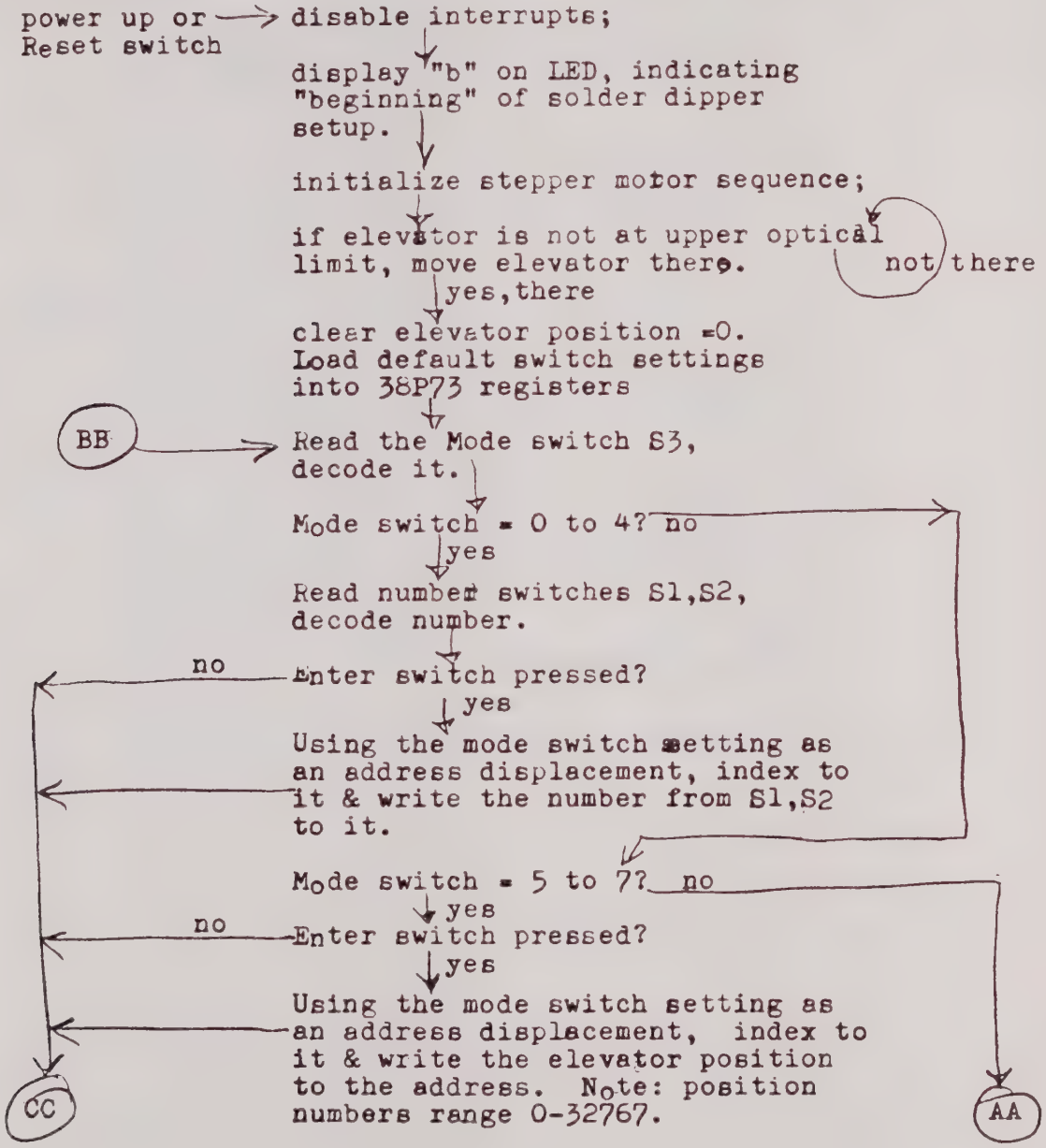
Q1-Q4	TIP101 OR EQUV
D1-D4	1N4937
D5	1N4756A (47V ZENER)
R3-R4	220Ω, 1/4 W
R5-R8	ALLEN BRADLEY SIP #102-B-222
R1-R2	DALE 15Ω 10W # RH-10

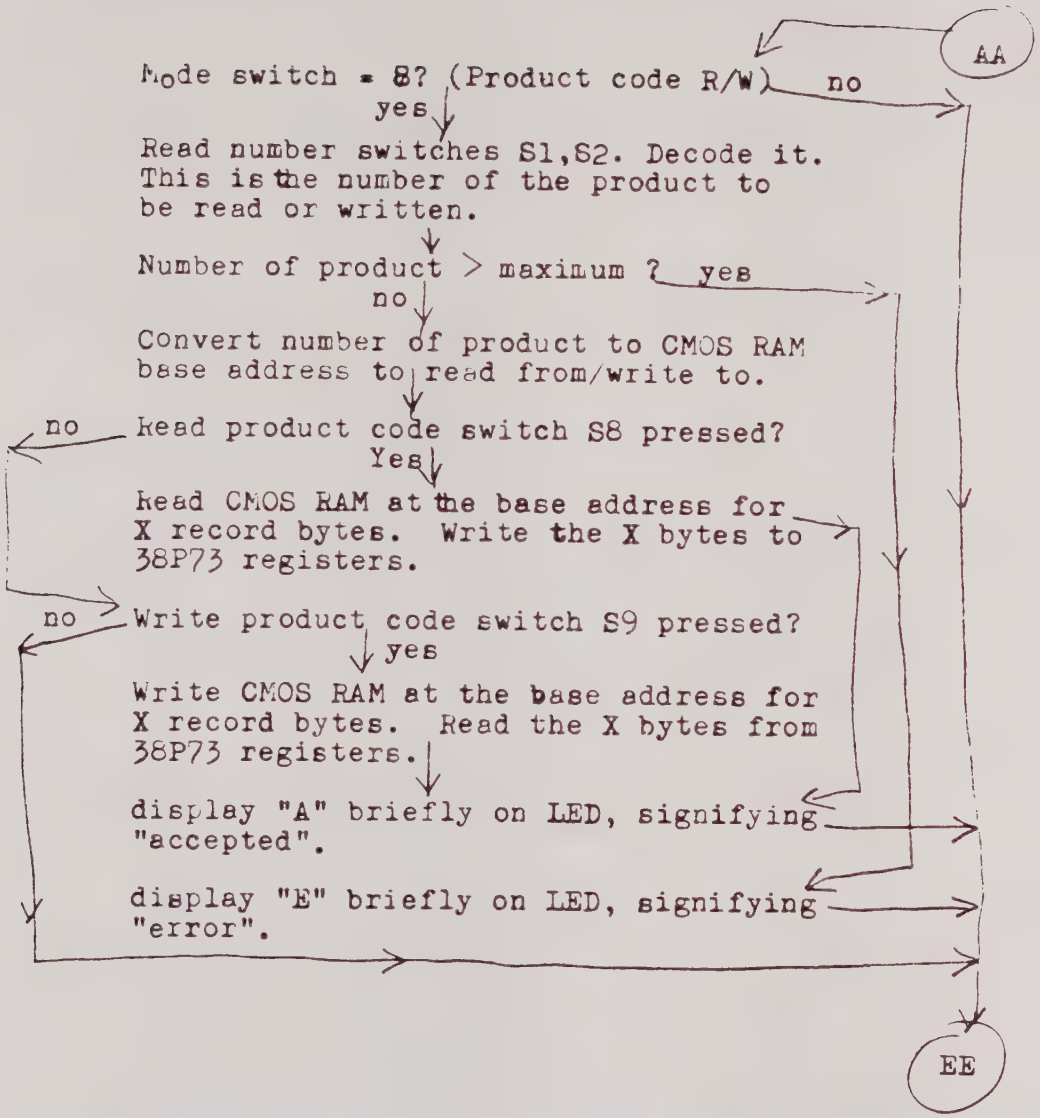
*NOTE: WITH 220V AC INPUT USE 1N4757 (51V ZENER

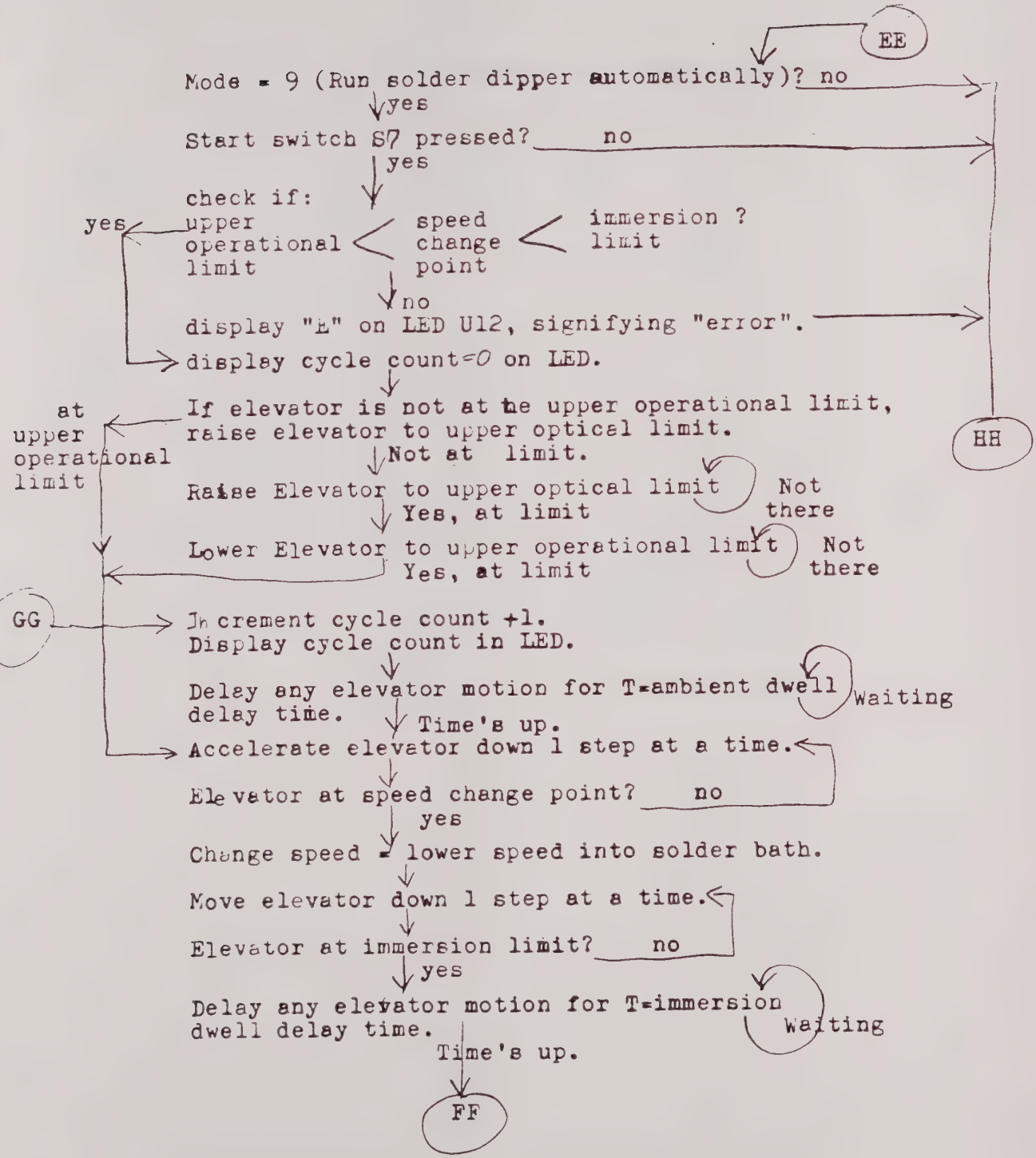
**NOTE; R1-R2 ARE MOUNTED OFF BRD.

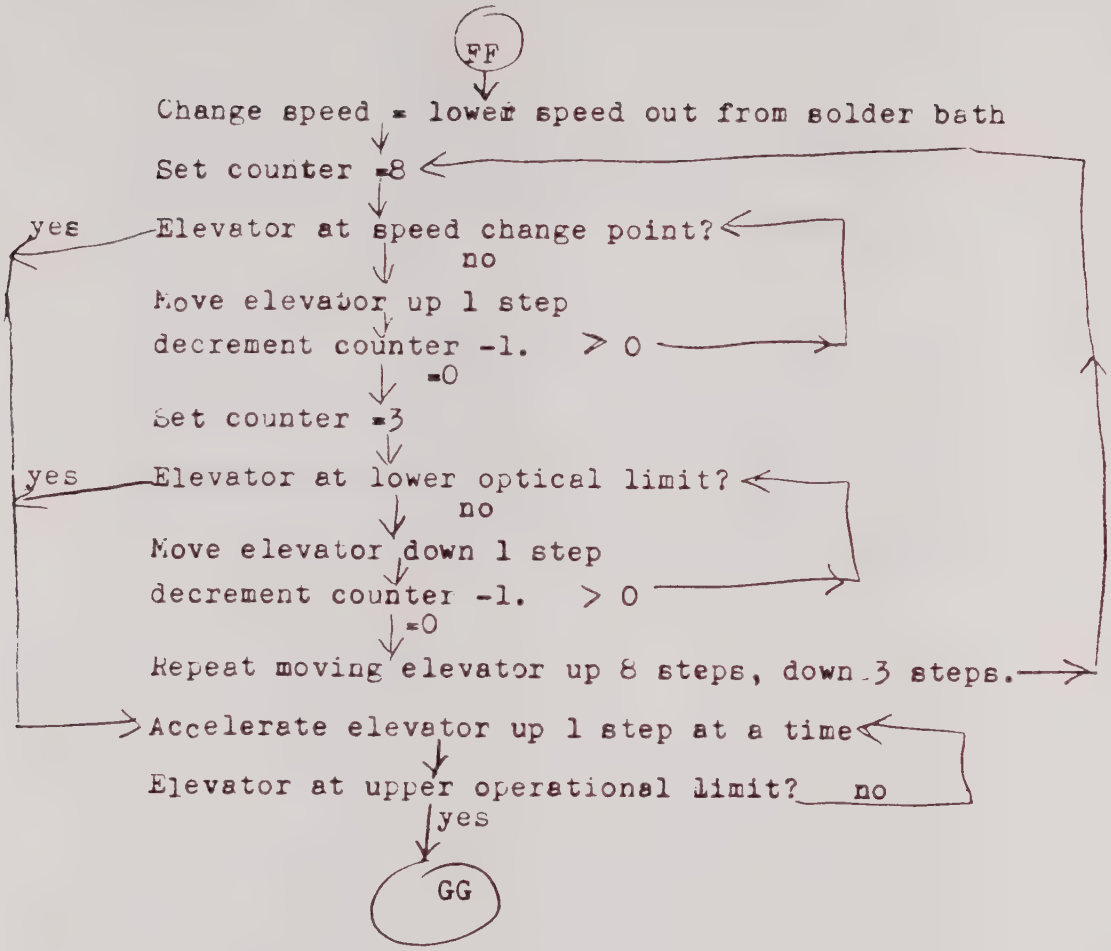
TITLE: STUFF CHT
SH. 2 OF 4
ISSUE D
SCALE
APPD. MC 3-17-83
B - 8125

SOLDER DIPPER GENERAL SOFTWARE FLOWCHART

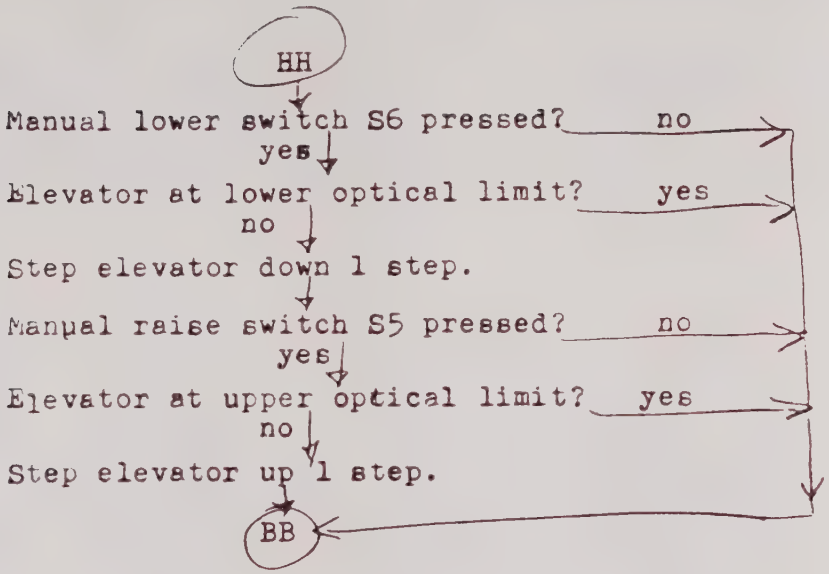

power up or Reset switch
disable interrupts;
display "b" on LED, indicating "beginning" of solder dipper setup.
initialize stepper motor sequence;
if elevator is not at upper optical limit, move elevator there.
not there
yes, there
clear elevator position =0.
Load default switch settings into 38P73 registers
BB
Read the Mode switch S3, decode it.
Mode switch = 0 to 4? no
yes
Read number switches S1,S2, decode number.
no
Enter switch pressed?
yes
Using the mode switch setting as an address displacement, index to it & write the number from S1,S2 to it.
Mode switch = 5 to 7? no
yes
no
Enter switch pressed?
yes
Using the mode switch setting as an address displacement, index to it & write the elevator position to the address. Note: position numbers range 0-32767.
CC
AA


AA
Mode switch = 8? (Product code R/W)
no
yes
Read number switches S1,S2. Decode it. This is the number of the product to be read or written.
Number of product > maximum ?
yes
no
Convert number of product to CMOS RAM base address to read from/write to.
no
Read product code switch S8 pressed?
Yes
Read CMOS RAM at the base address for X record bytes. Write the X bytes to 38P73 registers.
no
Write product code switch S9 pressed?
yes
Write CMOS RAM at the base address for X record bytes. Read the X bytes from 38P73 registers.
display "A" briefly on LED, signifying "accepted".
display "E" briefly on LED, signifying "error".
EE


EE
Mode = 9 (Run solder dipper automatically)? no
yes
Start switch S7 pressed? no
yes
check if:
yes
upper operational limit
speed change point
immersion limit ?
no
display "E" on LED U12, signifying "error".
HH
display cycle count=0 on LED.
at upper operational limit
If elevator is not at the upper operational limit, raise elevator to upper optical limit.
Not at limit.
Raise Elevator to upper optical limit
Not there
Yes, at limit
Lower Elevator to upper operational limit
Not there
Yes, at limit
GG
Increment cycle count +1.
Display cycle count in LED.
Delay any elevator motion for T=ambient dwell delay time.
Waiting
Time's up.
Accelerate elevator down 1 step at a time.
Elevator at speed change point? no
yes
Change speed = lower speed into solder bath.
Move elevator down 1 step at a time.
Elevator at immersion limit? no
yes
Delay any elevator motion for T=immersion dwell delay time.
Waiting
Time's up.
FF


FF
Change speed = lower speed out from solder bath
Set counter =8
yes
Elevator at speed change point?
no
Move elevator up 1 step
decrement counter -1.
> 0
=0
Set counter =3
yes
Elevator at lower optical limit?
no
Move elevator down 1 step
decrement counter -1.
> 0
=0
Repeat moving elevator up 8 steps, down 3 steps.
Accelerate elevator up 1 step at a time
Elevator at upper operational limit?
no
yes
GG

A8138


HH
Manual lower switch S6 pressed?
no
yes
Elevator at lower optical limit?
yes
no
Step elevator down 1 step.
Manpal raise switch S5 pressed?
no
yes
Elevator at upper optical limit?
yes
no
Step elevator up 1 step.
BB

MECHANIZATION ASSOCIATES
Mt. View, Calif.

PARTS LIST, AUTOMATIC SOLDER DIPPER MOD. 122B
SHT. 1 OF 3 REV. ----
NEW OR REV. DATE June 24, 1986

ITEM	QTY	MFR. PART NO.	TITLE	MFR
			REFERENCED DRAWINGS	
		D-6227	General Assembly, Issue G	
		A-8134	Table of Contents (Man.)	
		B-6242, Sh.2	Control Board Layout	
		A-6242, Sh.3	Control Board Schematic	
		A-8135	Operating Instructions	
		A-8125	Motor Board Layout	
		A-8125	Motor Board Schematic	
		A-8133	Control Panel Illustration	
		B-8126	Connection Diagram	
		A-8138	Software Flow Chart	
		A-8139	Software Memory Map	
		A-8140	Software Register Map	
		A-8141	Main Program	
		B-8130	Mechanical Schematic	
		A-8137	Speed Calibration	
		C-8132	Control Panel Assy.	
		A-6406	Acceleration Ramp	
		A-8129	Artwork (Switches)	
		A-8152	Model 122 to 122b Retrofit Kit Instructions	
		A-8142	Spare Parts List	
		A-8170	Software Eng'rg Documentation	
		A-8172	EPROM's	
			FIXTURES;	
		Opt.	A-1920 Non Mag. Axial Lead	
		Opt.	B-6217 DIP Package	
		Opt.	B-6217-03 Ti. Cov. Cer. Dip Fixture	
		Opt.	B-6217-04 Ti, Cov. Cer. Dip Fixture	
		Opt.	B-6221 - NS/C TO-3 Ti. Fixture	
		Opt.	B-6234 Flat Pac	
		Opt.	B-6207 LED	
		Opt.	B-6308 Hybrid	
		Opt.	B-6327 SIP	
		Opt.	B-8104-01 Titanium (.300" DIL)	
		Opt.	B-8104-02 Titanium (.600" DIL)	

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PARTS LIST, AUTOMATIC SOLDER DIPPER MOD. 122B

SHT. 2 OF 3 REV.

NEW OR REV. DATE 7/30/86

ITEM	QTY	MFR. PART NO.	TITLE	MFR
			PURCHASED PARTS	
9	1	M061FD02	Stepping Motor	Superior Ele
11	4	2-112	"O" Ring 1/2"	Bay Seal
12	2	2-010	"O" Ring 1/4"	Bay Seal
14	2	Any	1/2" Aviation Clamp	Any
17	1	FB46-2	Flanged Bearing	Boston
18	4	5115-37	Push Ring	Truac
19	A/R	D6-24	Belleville Washer (4T06)	PIC
20	2	4015	Nylon Standoffs	H.H. Smith
21	2	MSA8	Photo Eye	Gen. Inst.
25	2	825	Strain Relief Bushing	HEYCO
26	4	2135	Rubber Bumper	H.H. Smith
27	1	6-0861-1301	Power Switch	McGill
28	1	HTA or HKP	Fuse Housing	Buss
31	1	B-8147	Power Supply	
		RT-201	Transformer	Stancor
		SCBA	Full Wave Bridge	Semtek
		4Z00MFD	Capacitor 50 VDC	Mallory
		6600-5	Terminal Block	Smith
		100WA	5V Power supply	Dentron
16 Misc Hdwe	6	SS-1759	3/16, Non-Ins, 22-18 GA Female Quick Slide	Waldom
33	4	FB68-4	Flanged Bearing	Boston
34	1	17239B	Power Cord	Belden
35	16	8103-8324	Clip Nut	Tinnerman
37	4	C-8107-832	Clip Nut	Tinnerman
41	2	F4DD	1/4IDx5/8OD Flanged Ball Brg.	Fafnir
46	1	9P57-632-08	Knurled Head Thumb Screw	Stock Dr.
47	1		1/4-20 Socket Head Cap Screw	Stock Dr.
48	1		1/4-20 Lock Washer	Any
49	1		1/4-20 Hex Nut	Any
50	1	99-603-3	Knurled Thumb Screw Knob	Shear Loc
51	2		Nylon Washer	HH Smith
52	2	2672	6-32x1.5 Long Pan Head	Olander
57	1	333-S	Spring	Stock Spr.
	Opt	24F163 Type:T-51-S	Footswitch, Treadlite	Linemaster
	2	8955	Cable Clamps 1/8"D	HH Smith
	3	8956	Cable Clamps 3/16"D	HH Smith
	1	8913	Cable Clamp 5/16"D	HH Smith
		2745	Female Slide Crimp	HH Smith
		4841	Flanged Space Crimp	HH Smith
	AR	MPNY-750NA	Tie Wrap Mounting Plate	Brady
	AR	2745	Quick Slide	HH Smith
	AR	AA-1137	Quick Slide	HH Smith
	AR	80-50-0114	Crimp Terminals	Molex

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Mt. View, Calif.

PARTS LIST, AUTOMATIC SOLDER DIPPER MOD. 122B
SHT. 3 OF 3 REV.
NEW OR REV. DATE 2/5/86

ITEM	QTY	MFR. PART NO.	TITLE	MFR
			FABRICATED PARTS	
1	1	C-6215	Base	
2	1	C-6219	Cover Assembly	
3	1	C-1918	Front Panel	
4	1	A-6218	Back Cover	
5	4	B-1913	Lower Shaft Mount	
6	1	D-1914	Upper Shaft Mount	
7	1	B-1915	Shaft, Lar[illegible]	
8	1	A-6206	Motor Mount	
10	1	A-6371-[illegible]	Lead Screw	
13	1	A-6211	Drive Nut	
22	1	A-8145	Inertial Disc	
23	1	C-1901	Carriage	
24	1	B-6241	Dip Bracket Holder	
2	2	E-6217	DIP Pack	
32	1	A-[illegible]128	Motor Driver Board	
36	1	A-6264	Motor Drive Mo. Mount	
38	2	A-[illegible]265	Photo Interrupter	
39	1	C-6127	Front Panel (Control Box)	
40	1	F-6128	Panel Base	
42	1	A-6242	Bearing Spacer	
43	1	A-6244	Photo Eye Bracket	
44	1	A-6149	Base Shaft Support	
45	1	A-8153	Photo Eye Assy.	
53	2	A-6167	Shoulder	
54	1	C-6132	Control Panel Assy.	
55	1	A-8169	Shock Mount	
56	1	A-6171	Rubber Tubing	

ESSEX STANCOR SERVICE DATA

131 GODFREY STREET • LOGANSPORT, IN 46947

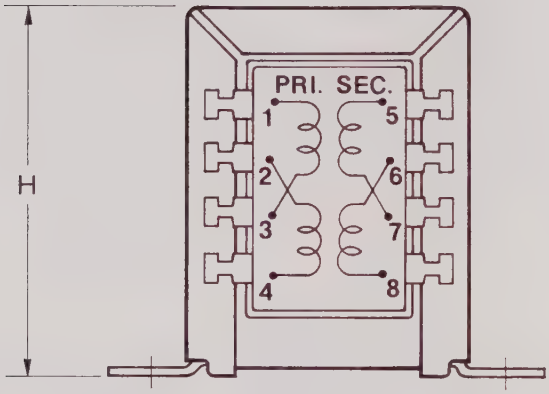
UNITED TECHNOLOGIES
ESSEX CONTROLS

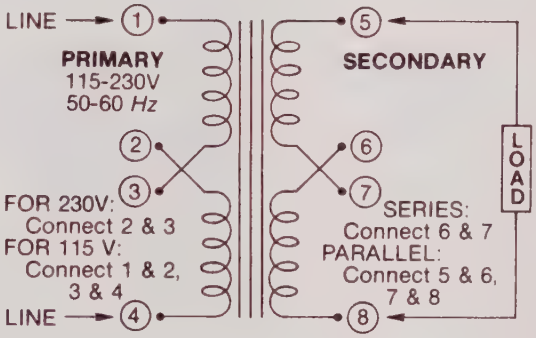
PART NO. P-6375 P-6376 P-6377

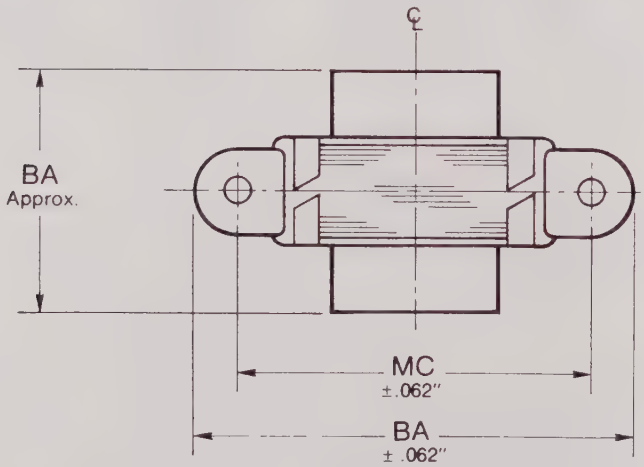
TYPE CONTROL TRANSFORMERS

DATE 8-14-81

S.D.S. NO. 8111







STANCOR PART NO.	PRIMARY	SECONDARY		VA RATING	MTG. TYPE	MTG. CTRS.	SHPG. WT. IN LBS.	HEIGHT OVERALL	BASE AREA
		PARALLEL	SERIES						
P-6375	115V/230V 50/60 Hz.	V @ 2A	12V @ 1A	12	S	2-3/8"	1	2-3/8"	2-7/8" x 1-3/4"
P-6376		6V @ 4A	12V @ 2A	24	S	2-13/14"	1-1/2	3-3/8"	3-1/8" x 2"
P-6377		12V @ 4A	24V @ 2A	48	S	3-1/8"	2-1/2	3-1/8"	3-5/8" x 2-3/8"

ON ALL

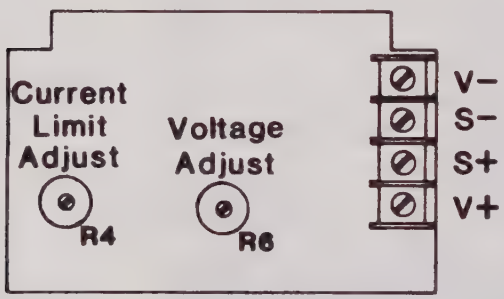
WORLD SERIES
INSTRUCTION MANUAL

INSTALLATION

Refer to the outline drawings for the dimensions of the three mounting surfaces. Mount the unit allowing clearance for adequate air movement over the chassis surfaces. Power supply mounts in all orientations except with sides vertically down. Use spacers or cut outs to avoid contact with projecting components. Output ratings and input jumper configurations are marked on the transformer.

SENSE OPTIONS

For use with local sensing, connect load between + and - output. For remote sensing multiple output PCB's, remove screws from terminal block and bend connecting strap upright. For remote sensing of single output units, remove shorting jumpers from terminal block. Connect load wires to terminal block with screws. Connect 22 gauge twisted pair to appropriate sense terminals. When the remote sense connections are used, some combinations of lead length and load impedance may cause the power supply to oscillate. These oscillations can frequently be eliminated by (1) adding approximately 200 uf at the load or (2) adding approximately 5 uf between + sense and + output and between - sense and - output.



Each output may be independently trimmed to its nominal output voltage with R6. The current limit on each output is independently adjustable with R4. The current limit is preset at the factory to insure safe operation of the unit and should not be adjusted.

MULTIPLE RATED OUTPUTS

Models which have multiple voltage ratings can be adjusted with R6 to provide any of the output voltages within the specification, except the 5 volts. To produce the 5 volt output, remove R10 from the PC Board.

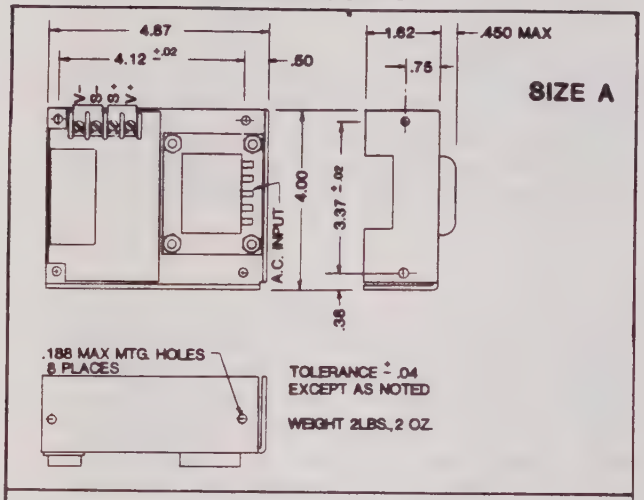
SPECIFICATIONS

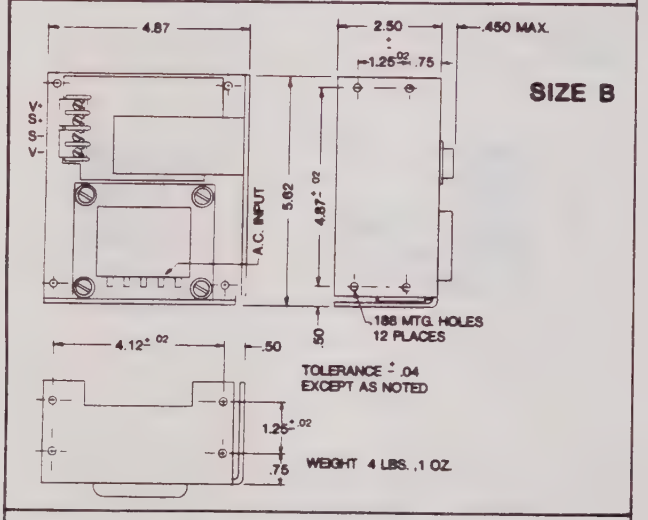
Line Regulation: ±0.05% for 10% line change
Load Regulation: ±0.05% for 50% load change
Ripple and Noise: 1 mv RMS, 5 mv P-P
Temp. Coefficient: 0.03%/C°
Isolation input to output: 3750VAC
input to case: 3750VAC
output to case 500VAC

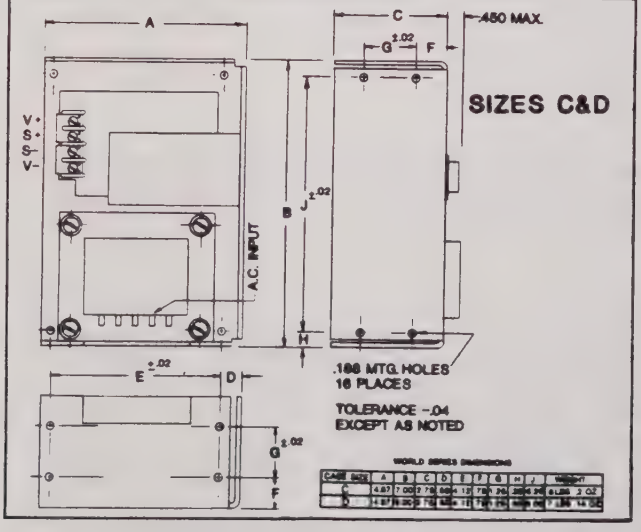
Operating Temp: 0°C-50°C, derate linearly to 40% at 71°C.
Storage Temp: -20°C to 85°C
Recovery Time: 30 µsec typical
Short circuit protection: Auto recovery at approx. 125% full load
Overvoltage protection: Included on all 5 volt outputs. Optional on others.

P.O. BOX 1369, WISSAHICKON AVENUE ■ NORTH WALES, PA 19454
PHONE: 215/699-9261 TWX: 510/661-8061

SINGLE OUTPUT







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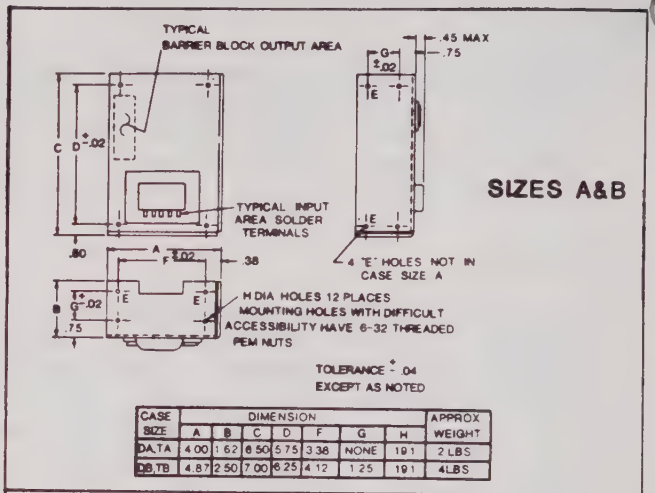
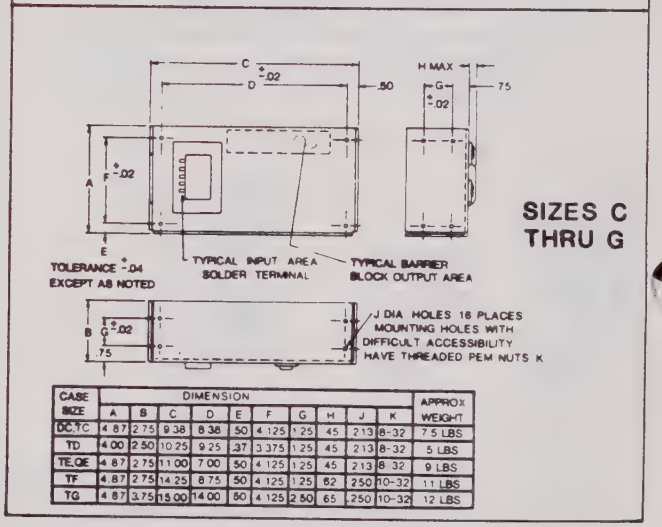


CASE SIZE	DIMENSION							APPROX WEIGHT
	A	B	C	D	F	G	H	
DA,TA	4.00	1.62	6.50	5.75	3.38	NONE	191	2 LBS
DB,TB	4.87	2.50	7.00	6.25	4.12	1.25	191	4LBS



CASE SIZE	DIMENSION										APPROX WEIGHT
	A	B	C	D	E	F	G	H	J	K	
DC,TC	4.87	2.75	9.38	8.38	.50	4.125	1.25	.45	2.13	8-32	7.5 LBS
TD	4.00	2.50	10.25	9.25	.37	3.375	1.25	.45	2.13	8-32	5 LBS
TE,QE	4.87	2.75	11.00	7.00	.50	4.125	1.25	.45	2.13	8-32	9 LBS
TF	4.87	2.75	14.25	8.75	.50	4.125	1.25	.62	2.50	10-32	11 LBS
TG	4.87	3.75	15.00	14.00	.50	4.125	2.50	.65	2.50	10-32	12 LBS

VAC	INPUT	JUMP
100	0 & 4	1-2 & 3-4
117	1 & 4	1-2 & 3-4
220	0 & 4	2-3
230/240	1 & 4	2-3

METRIC CONVERSION CHART
1 INCH : 25.4 MILLIMETERS
1 POUND : 0.45 KILOGRAMS

D-8305	140	TITLE MTR. BD. SCHEM		MECHANIZATION ASSOCIATES	
D-7165	[redacted]	MATL.	FIN.	MTN. VIEW, CA. 94041	
D-8126	1228	TOL. XXX ± .005, XX ± .015, X ± .030	DRN. / APP.	NO. A-8125 ISSUE F	
NEXT ASS'Y	MODEL		2-28-83 KC	SH. 3 OF 4	

D	2-28-83	KC	REDRAWN FROM SAME #	
E	6-26-84	F.P.	WAS IN 4753 (36V)	BTK
F	4-30-6	LP	WAS 5Ω, 10W; F_2 WAS 25V	BTK

Q1-Q4 TIP101
D1-D4 1N4937
D5 IN 5367B(43V) (5 WATTS) (E)

REFER TO: SH.1 ARTWORK
SH.2 STUFF CHT.
SH.4 DRILL CHT.

SLO-SYN COLOR CODE FOR STEPPING MTR.
ORIENTAL COLOR CODE

+25 – +37VDC (F_2)

RED → JD-3 → JR-2

RED → JP-6 → D5 → JP-11

R1 15Ω 10W (F) — PRP → JR1 — BLK YEL → JC-6

R2 15Ω 10W (F) — BRN → JR3 — WHT WHT → JC-5

ϕ1 ϕ2 ϕ3 ϕ4

JC-1 RED GRN → JP-1 → D1 → JP-15 → JP-16 → D2 → JP-2 → JC-2 RED/WHT BLK

JC-3 GRN BLUE → JP-3 → D3 → JP-14 → JP-13 → D4 → JP-4 → JC-4 GRN/WHT RED

JA-3 → SIP 2.2K 4W → R5 → Q1
JA-6 → SIP 2.2K 4W → R6 → Q2
JA-7 → SIP 2.2K 4W → R7 → Q3
JA-8 → SIP 2.2K 4W → R8 → Q4

JD-4 → 25VDC GND
JD-2 → 5VDC GND
JD-4 → 25VDC GND ← 25VDC GND → JA-2 → JD-2 → 5VDC GND
JD-4 → 25VDC GND

+5VDC → JD-1 → JA-1

+5VDC → 4.7KΩ ON I/O BRD. → JA-5 → JB-8 → X-UPPER PHOTO EYE → COIL=4

JP-7 → R3 ←220Ω 4W→ JP-10 → JB-2 → A=1 → C=2 → JB-7

JP-8 → R4 → JP-9 → JB-5 → A=1 → C=2 → JB-4

+5VDC → 4.7KΩ ON I/O BRD. → JA-4 → JB-3 → Y-LOWER PHOTO EYE → COIL=4

P2 G1MCAB → EM-3 → JB-1

P1 G1MCAB → EM=3

JB-7 → JA-2 → JD-2 → 5VDC GND

SHORT ON INTERRUPTER

SPARE PARTS LIST
MODEL 122B

2 each - B-6217 DIP Rack

1 each - A-8125 Motor Driver Board

1 each - D-8153 Photo Eye Assembly

1 each - M-061FD02 Stepper Motor, Superior

2 each - F4DD Bearings, Fafnier

1 each - B-6242 Computer Board, M.A.

1 each - A-6256, Assy. 8, Flat Cable Assembly, M.A.

REV.	DESCRIPTION	DATE	APP'D
K	ELIMINATED INTERNAL DISK	2-2	MM
-	ADDED ITEM 56 57 and 22 (INTERNAL DISK WAS) ITEM 22	2-2	MM
	ITEM [illegible] WERE DELETED ART #CHANGE ON ITEM #27, 31, 32	[illegible]	[illegible]
	PRINT UPDATE ITEMS 14 15, 21 16 CHANGED	[illegible]	[illegible]

SECT B-B

SECT C-C

SECT A-A

18.3

2.5

0.00

21.25

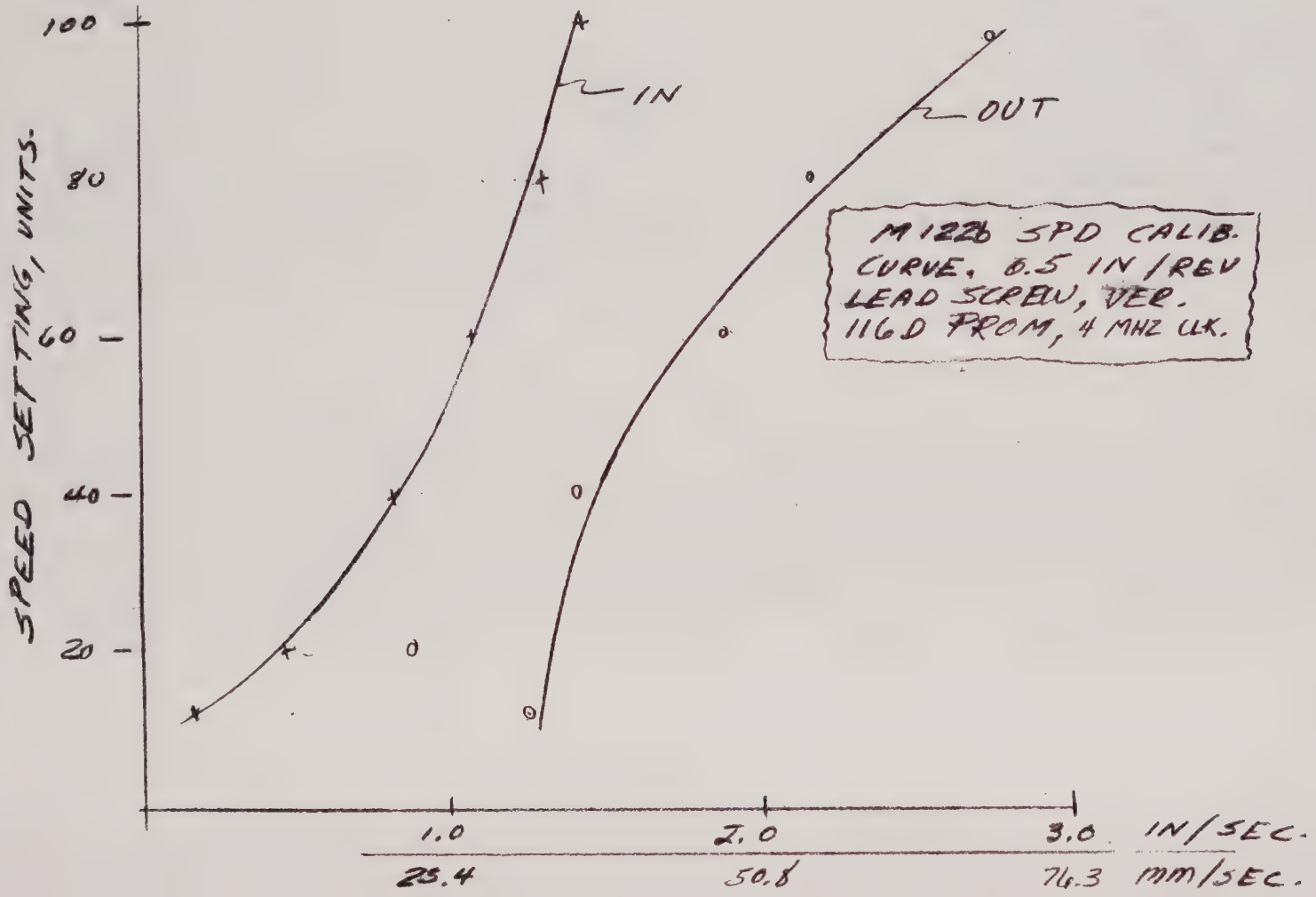
NOTE VIEWS - 1/2 SIZE, SECTIONS - FULL SIZE

SOLDER DIPPER

SEE NOTE 1 M122B GEN. ASSY

Mechanization Associates

MATL.	FIN.	MECHANIZATION ASSOC	REV.	DESCRIPTION	APP.	DAT
NEXT ASS'Y	MODEL NO.	APPROVALS BTK	DATE 2-7-85	MTN. VIEW, CA. 94041		
		DRN.		TITLE: M122 SPD. CALIB.		
		CHECKED		DWG. NO. A-4233.		
MANUAL.	122b					
		SCALE:	SIZE	SHEET OF	REV.	



NEXT ASS'Y	MODEL NO.	APPROVALS	DATE
		BTK	12/28/5
		DRN.	
		CHECKED	
MANUAL	122b	SCALE: ~	SIZE A

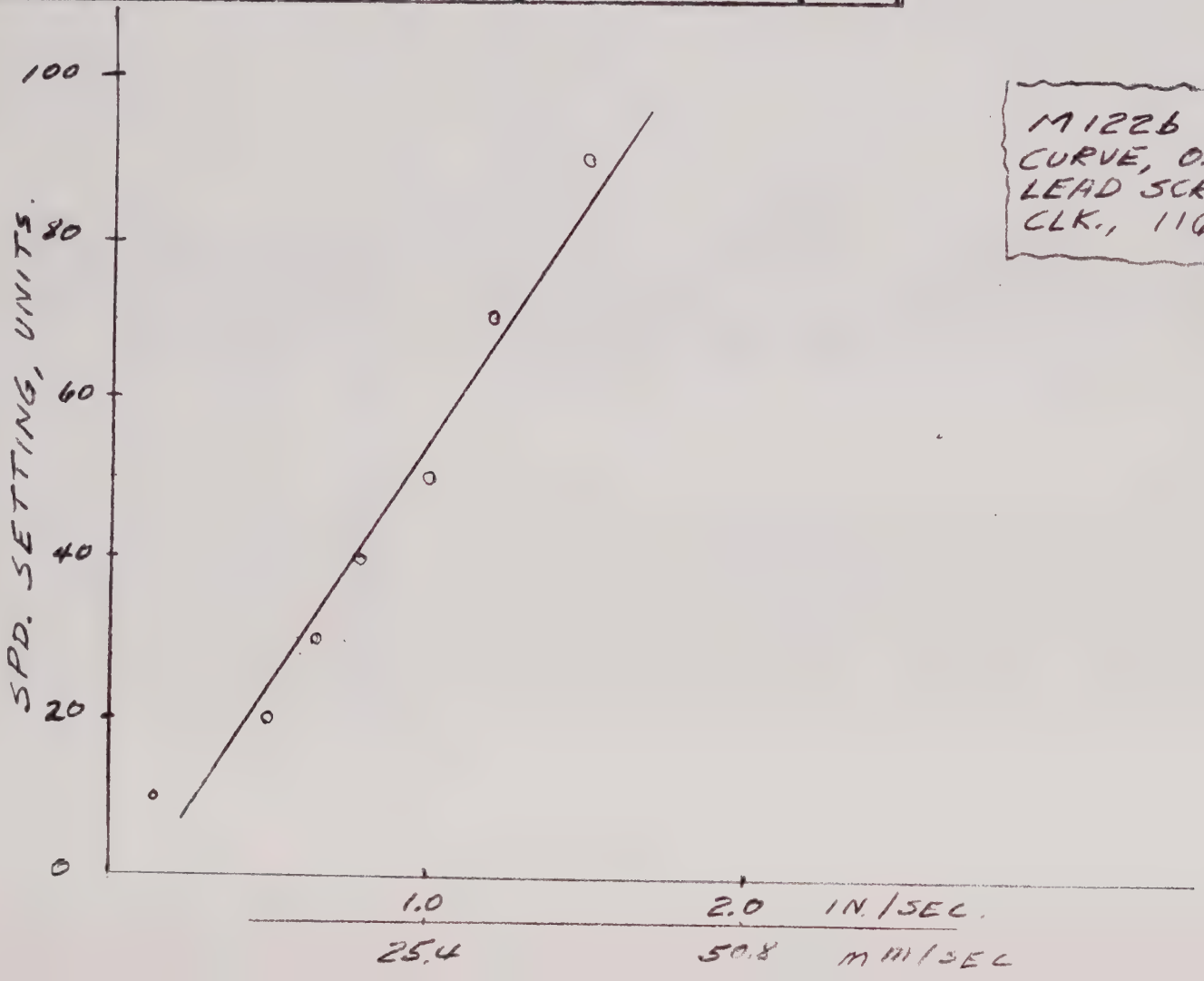
MECHANIZATION ASSOC.
MTN. VIEW, CA. 94041

TITLE: SPD. CURVE, 116 G.

DWG. NO. A-6210

SHEET 1 OF 1 REV.

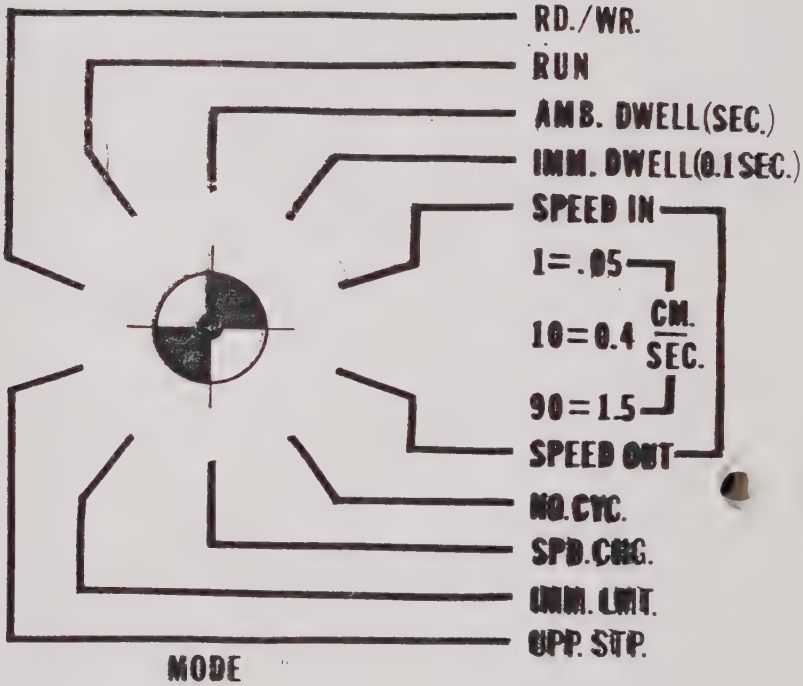
REV.	DESCRIPTION	APP.	DAT



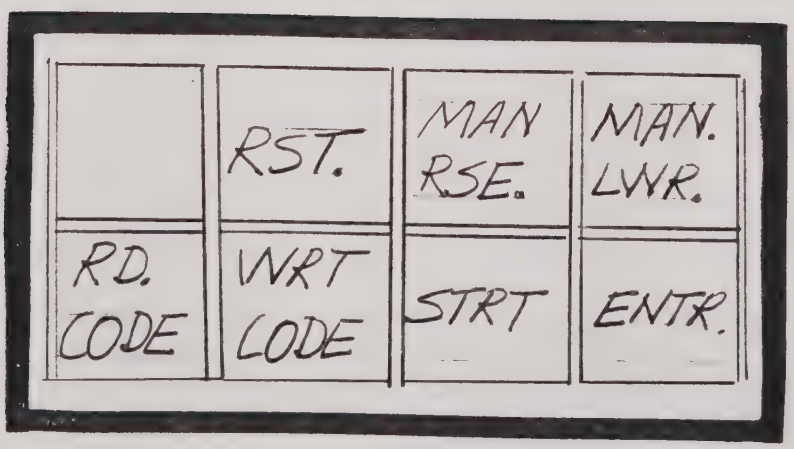
M122b SPD. CALIB. CURVE, 0.5 IN/REV LEAD SCR., 4 MHZ CLK., 116 G PROM

X10

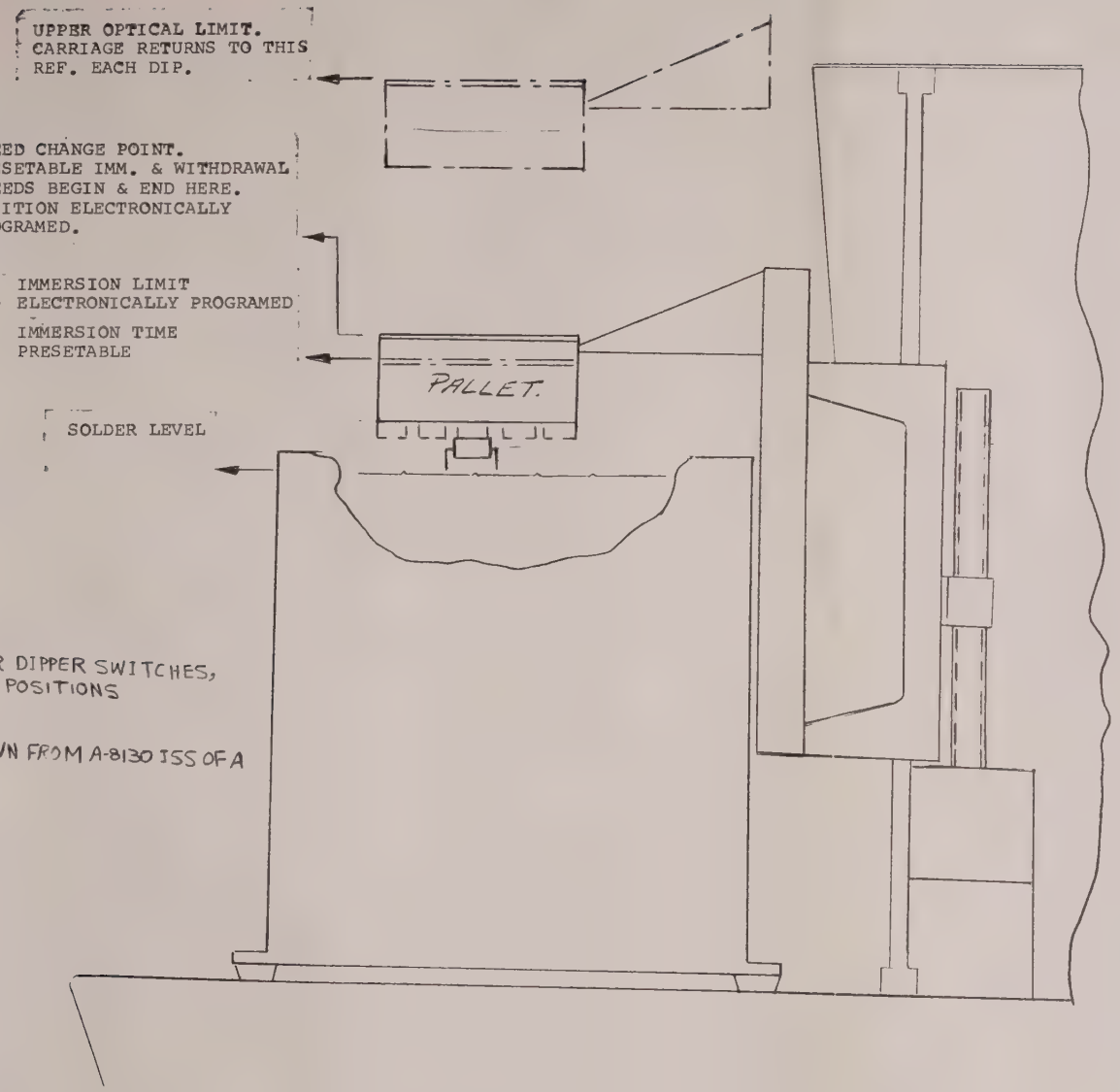
X1



MODE



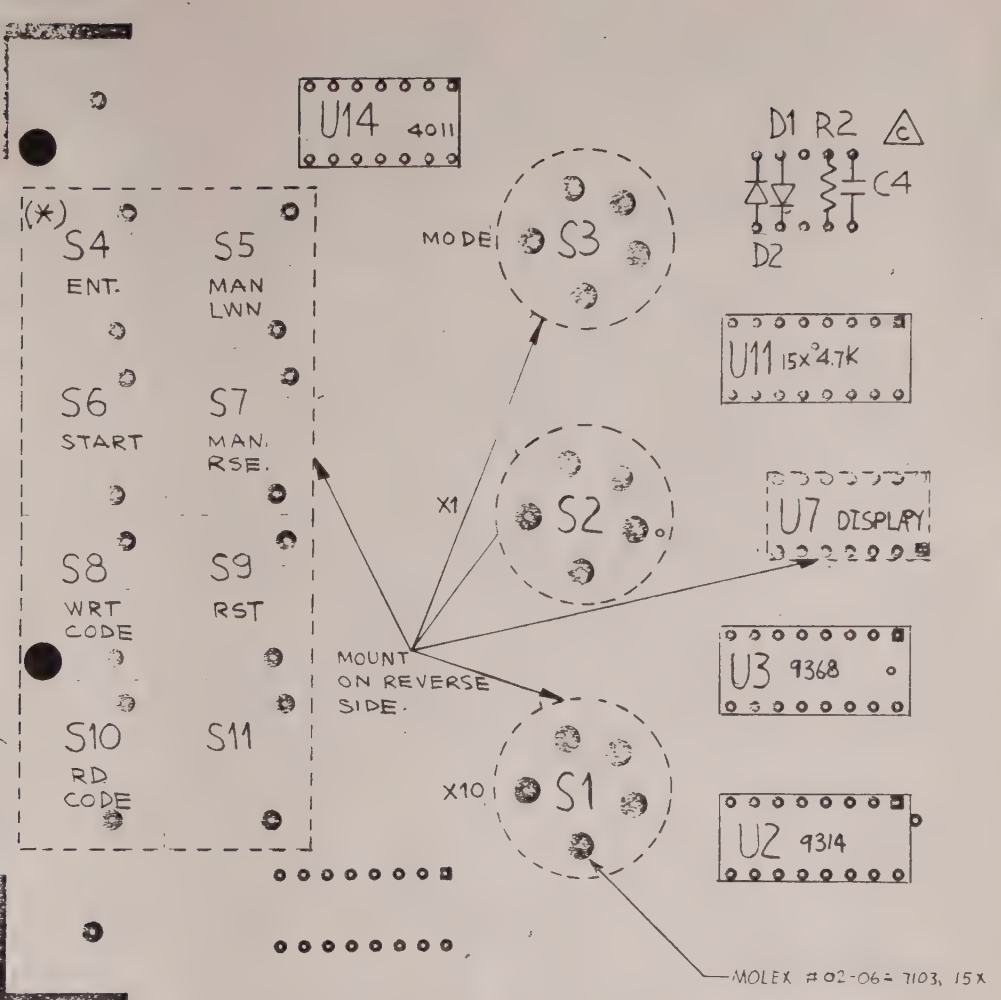
DWG. NO. A-8138

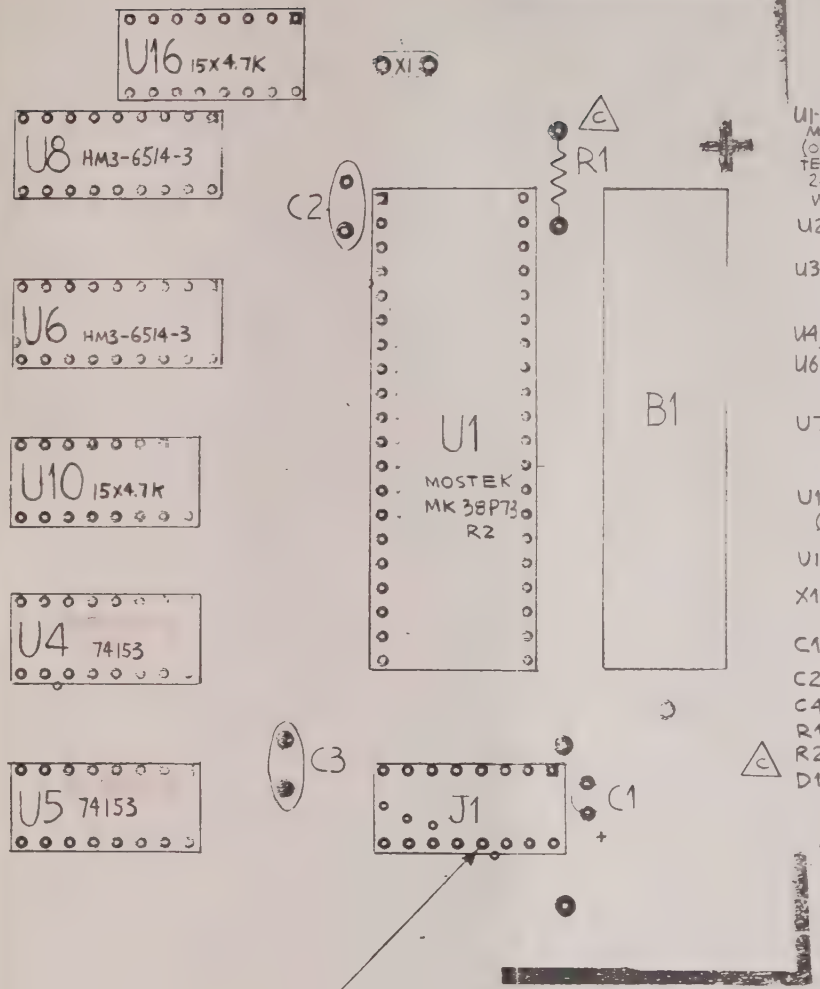


NOTE 1:
SOLDER DIPPER SWITCHES,
LIMITS, POSITIONS

NOTE 2
REDRAWN FROM A-8130 ISS OF A

		TITLE NOTE 1			SPECIFICATION APPROVED DSB
		APPL.	DTN.		MFG. DATE 7/1/41
D-6227	12?B		DRN.	APP.	NO. B-8130 REV A
			MJ		SH. 1 OF 1





PARTS LIST:

U1-MOSTEK MK38P73R2, MK38P70/02R-40 (OR EQ), WITH TEXTOOL SOCKET # 240-4846-00-1107 W/ 2716 EPROM. REV.
U2 - 9314 QUAD LATCH.
U3 - 9368 DECODER/ DRIVER.
U4,5 - 74LS153
U6,8 - HM3-65143 (HARRIS) OR DK1-5514-3
U7 - 7SEG. DISPLAY (HP-5082-7760) (SUB-5082-7653)
U10,11,16 - 15X4.7K (ALLEN-BRADLEY 316A-472)
U14 - CD4011A
X1 - 4.0MHZ CRYSTAL (MPI)
C1 - 22μF, 16V TANT.
C2,3 - 100PF.
C4 - .1μF, 12V.
R1 - 47Ω, 1/4W
R2 - 10K, 1/4W
D1,2 - IN4001
S1,2,3 - AMP 435123-1
S4→S11 - GRAYHILL 1-SET OF 6: #82-650-19 2-SET OF 1: #82-150-38
31 - GOULD MM0903
J1 - SAMTEK SOCKET ICO-316-SGT OR 3M # 3435.

REV	DESCRIPTION	DATE	BY	APPR.
B	REDRAWN FROM SAME NO., ISS. D	3/21/85		
C	DELETED U9, ADDED C4, R2, D1&D2, RELOCATED R1.	6/5/86	LP	

		TIME CONTROL LAYOUT			RECTANGULATION ASSOCIATES
	1228	MATL.	FIN.		MTN. VIEW, CA. 94041
B-8126	1228	XXX ± .005	DRN.	APP.	NO. B-6242 ISSUE C
NEXT ASS'Y	MODEL	TOL. XX ± .015 X ± .030	2/19/86	C.J.	SH. 2 OF 4

NOTE: PANEL ON C-8127

LTR	DATE	DESCRIPTION	BY
B CONT-	12-17-81	CORR.: U11-11 TO U5-11 from U11-11 to U5-10 (U6-13 to U16-3, U6-9 to U16-4, U8-11 to U16-5, U8-12 to U16-6) MADE: U11-15 TO U5-10 from U11-13 to U5-11, U11-14 TO U5-6 from U11-14 to U5-5 DEL.	Rp
C	6-6-8	NEW KEY BRD. SWITCHES	KC
D	10-8-81	U6,8 U43 2114	JCH
E	1-11-82	CORRECTED J1, R13 B3 TO +5VDC, MCAB DIAG. 37K	LP

LTR	DATE	DESCRIPTION	BY
A	8/11/81	ADDITIONS & DELETIONS MADE PER JOHN LUM. U6-8, U8-8 removed from Vcc U3-5 removed, U13 ADDED, U3-5 TO U3-4 U9-11 TO S10-2, U1-24 TO U5-14 U1-25 TO U4-2, U5-2 / U1-22 TO U6-8, U8-8 U1-7 TO U3-3 U1-2 TO XTAL	DR
B	12-17-81	CORRECTIONS MADE: U6-14 TO U16-1 from U6-11 TO U16-7; U6-13 TO U16-2 from U6-12 TO U6-2; U11-12 TO U14-6; U11-10 TO U6-5 from U11-12 TO U5-6. ADDED: U6-12 TO U16-15, U6-11 TO U16-14, U10-9 TO U2-9, U15-6 TO U18-7; ADDED: U1-25 TO U9-2, U1-25 TO U5-2	Rp

S1,2,3 - AMP 435123-1

C S4-10 - GRAYHILL 1-SET OF 6 # 82-650-19, 2-SET OF 1 # 82-150-38
OLD SWITCHES 87F C3-20L

U7 - HP 5082-7760

U1 - MOSTEK MK38P73

U14 - CD4011A

U15 - COMPONENT CARRIER

B1 - GOULD MM0903

U16 SPARE

U1 MK38P73

U14 4011

U15

U6 U8 HM 6514 OR OKI 5514-3

U10 U11 15X9.7K

U2 9314 U3 9368

U4 74153 U5 74153

U7 3

U9

S1 X1 C, S2 X10 C, S3

U1-26 U1-29 U5-13 U4-3

U1-25 U1-25

U1-39

U7-3

U8-18

VCC

U9-7

U9-8

B1 3.6V. BATT.

5V. PWR. SUPP.

REF TO A-8129 FOR LETTERS

S10 RST., S5 MAN RSE, S6 MAN LW, S8 RD CODE, S9 WR CODE, S7 STRT., S4 ENTR.

ADDRESS BUS

STEPPING MOTOR LEADS

SEG. E D C B A G F

NOT USED

POLARIZED

NOT USED

REF A6247 sh 1 WIRE LIST

PHOTO-EYES' PIN Nº LIST

PHOTO EYES FUNC	H21B1 PIN #	MCA8 PIN #
ANODE	2	1
CATH.	1	2
COLL.	3	4
EMTR.	4	3

MCA8

LOWER DET. P1

UPPER DETECTOR P2

H21B1

R3 220Ω (ON MTR 3Ω)

R4 220Ω (ON MTR 8Ω)

		TITLE SCHEMATIC	MECHANIZATION ASSOCIATES
		MATL. FINISH	MTN. VIEW, CA. 94041
	122B	XXX ± .005 TOL. XX ± .015	DWN. APP. B6242 SCALE E

LTR	DATE	DESCRIPTION	BY
B (CONT.)	12-17-81	CORR.. MADE : U11-11 TO U5-11 from U11-11 to U5-10; U11-15 TO U5-10 from U11-15 to U5-11; U11-14 TO U5-6 from U11-14 to U5-5 DEL. { U6-13 to U16-3, U6-14 to U16-4, U8-11 to U16-5, U8-12 to U16-6 }	RP
C	6-6-83	NEW KEYBD. SWITCHES	KC
D	10-86 12-12-86	U6,8 UA5 2114 CORRECTED J1, R13 R2 TO +5VDC. MCAB DIAG.	JCH LP

LTR	DATE	DESCRIPTION	BY
A	8/1/81	ADDITIONS & DELETIONS MADE PER JOHN LUM. U3-8, U8-8 removed from VCC; U3-5 removed, U13 ADDED, U3-5 TO U3-4 U3-11 TO S10-2, U1-24 TO U5-14; U1-25 TO U4-2, U5-2 ! U1-22 TO U6-8, U8-8 U1-7 TO U3-3 U1-2 TO XTAL	DR
B	12-17-81	CORRECTIONS MADE : U6-14 TO U16-1 from U6-11 to U16-1; U6-13 TO U16-2 from U6-12 to U16-2; U11-12 TO U3-6 from U11-12 to U4-6; U11-10 TO U6-3 from U11-13 to U5-6. ADDED { U6-12 to U16-15, U6-11 to U16-14, U10-9 to U2-9, U15-6 to U18-7; U1-25 to U9-2, U1-25 to U5-2 }	RP

S1,2,3 - AMP 435123-1

C S4-10 - GRAYHILL 1-SET OF 6 # 82-650-19, 2-SET OF 1 # 82-150-38
OLD SWITCHS 87F C3-20L

U7 - HP 5082-7760

U1 - MOSTEK MK38P73

U14 - CD4011A

U15 - COMPONENT CARRIER

B1 - GOULD MM0903

U16 (15X4.7K): U6-14, U6-13, U8-12, U8-13, U8-14, U8-11, U6-11, U6-12 → +5V. SPARE

1KpF, 1KμF TANT.

U1 MK38P73: U3-4, U15-6, GND, U3-7, U4-9, U4-7, U5-7, U5-9, S9-2, J1-5, J1-4, S8-2, U8-12, U8-11

U14 4011: U16-8, U8-8, U6-10, U8-10, U6-8, U8-9, U15-6, U1-23

U15: 3.9K, 330Ω, 100Ω, 2.2K, 2.7K, 1.47K; +5, GND, J1-39, U14-5,9

U1-22

U6, U8 HM 6514 (OR OKI 5514-3 / JKI 5514-3): J9-7 (+ BATTERY), GND, U1-19, U1-18, U1-17, U1-16, U8-8, U6-8, U1-6, U1-5, U14-10, U1-8, U1-9, U1-10, U1-3, U1-2, U1-15, U14-10

U2 9314, U3 9368: U1-37, J1-3, J1-6, J1-7, T1-8, U10-9, U10-10, U1-7, +5V, GND, SEG. E, D, C, B, A, G, F, U7-3 → U9-10

STEPPING MOTOR LEADS

U4-6, U4-10, U5-6, U5-10 → S1 X1

U4-5, U4-11, U5-5, U5-11 → S2 X10

U10 (15X4.7K): U1-16, U1-18, U1-19, U1-6, U1-3, U4-4, U1-5, U1-17 → +5V, U1-27, U1-28, U1-26, U4-5, U1-29, U3-4,5, U2-9

U9-7 → B1 3.6V. BATT.

U9-8 → 5V. PWR. SUPP.

U4-4, U4-12, U5-4, U5-12 → S3

U11 (15X4.7K): U5-4, U4-4, U5-12, U4-12, U5-3, U4-3, U4-13, U5-13 → +5V, U5-10, U5-6, U4-11, U5-5, U5-11, U4-6, U4-10

PHOTO-EYES' PIN Nº LIST

PHOTO EYES FUNC.	H21B1 PIN #	MCA8 PIN #
ANODE	2	1
CATH.	1	2
COL!..	3	4
EMTR.	4	3

REF. TO A-8129 FOR LETTERS

S10 RST., S5 MAN RSE, S6 MAN LW, S8 CODE, S9 CODE, S7 STRT., S4 ENTR.

U15-6, U4-13, U5-3 → U1-26, U1-29, U5-13, U4-3

J1: 22μF 16V. TANT., GND, Ø1, LOWER U1-27, UPPER U1-28, Ø2, Ø3, Ø4 → +5V; NOT USED, POLARIZED, NOT USED

U14: GND, S4-2, S3-1, S2-1, S1-1, GND, U1-33, U1-32 → U1-25

U14: GND, S6-2, S3-4, S2-4, S1-4, GND, J1-31, U1-30 → U1-25

U9: J1-4 (COL.) 4, LOWER DET. (EM.) 3, P1, MCA8, JB-3, JB-4, 2 (CAT.), 1 (AN.), JB-5, JD-3, R3, (R4), JA1, +5V, J1-5

U9: .1μF 12, 10KΩ 11, +5V, GND, U7-3, 1N4001, 1N4001, U6-8, U8-8 (BATT.), VCC, U1-39, U15-5, S10-2

J1-4, JB-3, JB-4, LOWER DETECTOR P1, H21B1, JB-5, JB-6, JD-3, R3 220Ω (ON MTR 32), R4 220Ω (ON MTR. 80), JA1 +5V

JB-8, JB-2, UPPER DETECTOR P2, H21B1, JB-1, JB-7, JD-3

REF. A6242 sh.1 WIRE LIST sh.2 LAYOUT

		TITLE SCHEMATIC		DOCUMENTATION ASSOCIATES	
	122B	MODEL	TOL. XX ± .015, X ± .030	DRWN. DR	APP.	B6242 ISSUE E
NEXT ASS'Y						SH. 3 OF 3

LTR	DATE	REVISION	BY	CHK
A	5/3/83	JD WAS CHANGED 2&3 REVERSED	C.JULIAN	
B	6-29-83	XFMR CONNECTIONS WAS ADDED	KG	
C	6-30-83	ALTERNATE 5V SUPPLY ADDED	KG	BZK
D	10/2/84	WAS 4700 MFD AT 25 VDC	JC H	BZK
E	10/5/84	ADDED R1 & V1	JC H	BZK
F	9/6/85	ADDED JUMPER FROM PINS 2 TO 3.	TM	

REVISED 8/16/82 C.L.

LTR	DATE	REVISION	BY	CHK
G1	4/30/86	COLOR CODE TABLE FOR MTR	KP	BZK

ALTERNATE XFMR P-6377

PRIMARY
FOR 230V CONNECT 2&3
FOR 115V CONNECT 1&2, 3&4

SECONDARY
SERIES 2&4 CONNECT 6&7
PARALLEL 1&4, 2&3 CONNECT 5&6, 7&8

S1 OBSOLETE

POWER SUPPLY COMPONENTS MOUNT ON SUPPORT BRACKET A6243

NOTE 4: QUICK SLIDES (SMITH #2745)

JA	DESC.
1	+5V.
2	GND.
3	Ø1
4	P1 COLL.
5	P2 COLL.
6	Ø2
7	Ø3
8	Ø4
9	—
10	—
11	—
12	—
13	—
14	—
15	—
16	—

K/B

SOFTWARE ON BD. A6242 INSIDE K/B.

MOTOR

NOTE 1:
FOR 220V INPUT:
DELETE 2-5 CONN.
ADD 4-5 CONNECTION

NOTE 2:
FOR TB1, VR1, AND C1 USE 12 BLOCK SPADE FL. TERM. (SMITH #4841)

A-6256, ASSY#8

JC P#	PHASE	COLOR CODES FOR MOTORS		
		ORIENTAL #PH266-02	NOVATRONICS #23M30J2	SUPERIOR M#61FD-80026
2	2	BLK	RED/WHT	RED/WHT
4	4	RED	GRN/WHT	GRN/WHT
5	2&4	WHT	WHT	BLK/WHT+GRN
1	1	GRN	RED	RED
3	3	BLU	GRN	GRN
6	1&3	YEL	BLK	BLK+WHT

ALTERNATE 5V SUPPLY DELTRON #100WA

V- TO TB1-5
S-
S+
V+ TO TB1-4

FOR 110 V.AC CONNECT 1&2, 3&4
FOR 220 V.AC. CONNECT 2&3

COMP.	DESC.
F1	1.5A.
S1	Mcgill # 6-0861-1301 Power Switch
TB1	TERMINAL BLOCK (5 CIRCUITS) G70
T1	STANCOR RT-201 OR P-6377 (KULKA#)
D1	FULL WAVE BRIDGE
VR1	5V. REGULATOR (LM340K-5)
C1	4200 MFD. 50 VDC
P1-2	GE H21B1 / GI MCA8
JA	REF. TO A-8125 SH. 5
JB	
JC	
JD	
MTR	ORT. MTR PH26601 / NOVATRONIC 23M30J2
R1	680Ω 1w PULLDOWN RESISTOR
V1	V130LA20A VARISTOR, G.E. CO.

JB-H21B1

1 EMTR P2-4	P2-3	P2 UPPER
8 COLL. P2-3	P2-4	
2 AND P2-1	P2-1	
7 CATH P2-2	P2-2	
3 COLL P1-3	P1-4	P1 LOWER
6 EMTR. P1-4	P1-3	
4 CATH P1-2	P1-2	
5 AND P1-1	P1-1	

GI-MCA8

PIN #1

NOTE: SHORT PINS 2 AND 3 LOWER ONLY.

MOTOR DRIVER BD A8125

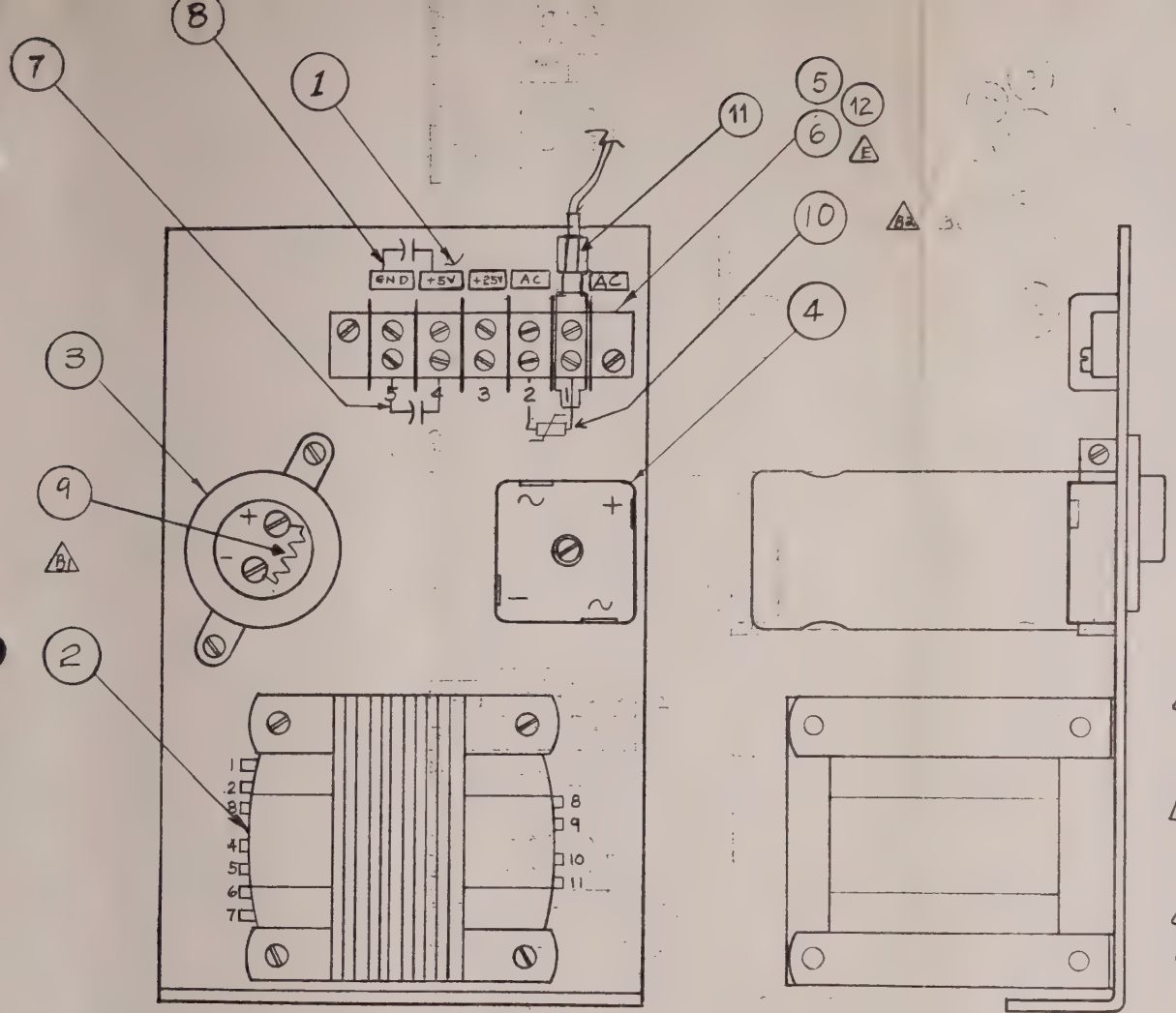
A-6256 ASSY 9, OL-=20"

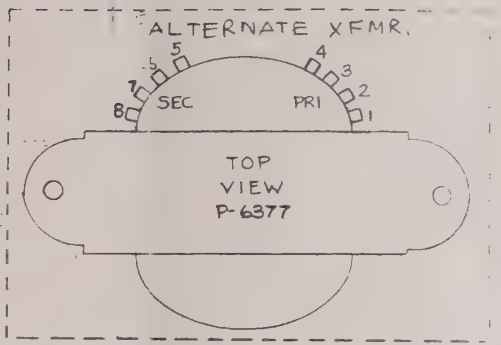
Note: See A-8153 FOR ASSY #.

REF CONTROL-
BD A6242 ARTWORK SH.1, LAYOUT SH.2, SCHEM SH.3, DRILL CHT. SH.4
MOTOR DRIVER BD. Artwork SH.1, LAYOUT SH.2, SCHEM. SH.3, DRILL CHT. SH.4

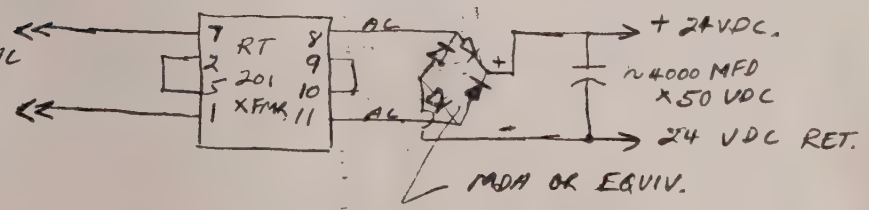
		TITLE CONN. DIAG.			MECHANIZATION ASSOCIATES
		STD.	FIN.		MTN. VIEW, CA. 94041
D6227	1233	XX ± .005	DRN.	APP.	NO. B8126 REV G1
NEXT ASS'Y	MODEL	TOL. XX ± .015 X ± .030	C.L.	10/31/86	SHT. 1 OF 1

A	RC	6-20-84	BJK	ADDED TRANSFORMER AND PIN ASSIGNMENTS
B	JCM	10-5-84	BJK	ADDED R1, & ADDED V1
C	TM	1-7-85		DELETED NSC LM340R-5 5 VDC REGULATOR (CHEMI)
D	LP	4/30/86	BJK	CHANGED IT# 9 : WAS 680Ω, 1W.
E	LP	7/31/86	BJK	UPDATED TERM. BLOCK, FLANGED TRACK & END.





E	12	2	6041111	ONE END STOP	AMP
	11	AR	2745	FEMALE SLIDE	H.SMITH
	10	1	V130LA20A	VARISTER	GE
D	9	1	1KΩ, 2W	PULLDOWN RESISTOR	ANY
	8	1	.0047μF	CERAMIC DISC CAPACITOR	ANY
	7	1	10μF 25V	ELECTROLYTIC CAPACITOR	ANY
E	6	1	1-6041021-6	TERMINAL BLOCK (5 CKT)	AMP
C	5	1	1-60805-1	FLANGED TRACK	AMP
	4	1	SCBA	FULL WAVE BRIDGE	SEMTECH
	3	1	50VDC X4200MFG	CAPACITOR	MALLORY
	2	1	RT201	TRANSFORMER OR P-6377	STANCOR
	1	1	A6243	POWER SUPPORT BRKT.	M.A
IT.	QT.		P/NO.	DESCRIPTION	MFG



		TITLE POWER SUPPLY			MFG. INFORMATION & ADDRESS
		MATL. ——— FIN. ———			MTN. VIEW, CA. 94041
D6227	122b	XXX ± .005	DRN.	APP.	NO. B8147 ISSUE E
NEXT ASS'Y	MODEL	TOL. XX ± .015	7-6-82	N.Y.	SH. 1 OF 1
		X ± .030